WHAT IS CLAIMED IS:

1. A hydrophilic, cast polymer matrix, the matrix comprising a sulfone polymer, wherein the polymer is sulfonated in solution using a sulfonating acid solvent.

2. The matrix of claim 1, wherein the sulfone polymer is polyarylsulfone or polyarylethersulfone.

3. The matrix of claim 2, the polyarylsulfone or polyarylethersulfone comprising a plurality of aromatic rings, wherein less than about one third of the rings are sulfonated.

4. The matrix of claim 1, wherein the matrix additionally comprises a substantially non-sulfonatable polymer.

5. The matrix of claim 4, wherein the substantially non-sulfonatable polymer comprises up to about 90 wt. % of the polymer mixture.

6. The matrix of claim 4, wherein the substantially non-sulfonatable polymer is selected from the group consisting of polyethyleneglycol, non-aryl polysulfone, non-aryl polyethersulfone, poly-paraphenylene terephthalamide, polyetherketone, and mixtures thereof.

7. The matrix of claim 4, wherein the non-sulfonatable polymer comprises polyvinylpyrrolidone.

8. The matrix of claim 1, wherein the matrix is selected from the group consisting of a porous matrix, a non-porous matrix, and a membrane matrix.

9. The matrix of claim 8, wherein the matrix comprises a flat sheet.

10. The matrix of claim 9, wherein the sheet is from about 50 to 1000 μm in thickness.

11. The matrix of claim 9, wherein the sheet is less than about 300 μm in thickness.

12. The matrix of claim 11, wherein the sheet is less than about 100 μm in thickness.

13. The matrix of claim 1, wherein the matrix comprises a membrane matrix having flow channels.

14. The matrix of claim 1, wherein the matrix comprises a membrane having a first surface and a second surface, each surface comprising pores therein, the

membrane further having a support region between the first and second surfaces, the support region having a plurality of flow channels therein, wherein the pores of the first surface and pores of the second surface are connected via the flow channels.

15. The matrix of claim 14, wherein the pores of at least one surface have an average diameter of between about 0.01µm and about 50µm.

16. The matrix of claim 14, wherein the support region comprises one or more structures selected from the group consisting of closed cell pores, open cell pores, macrovoids, finger structures, and mixtures thereof.

17. The matrix of claim 14, wherein the flow channels are substantially constant in diameter throughout the support region.

18. The matrix of claim 14, wherein the flow channels gradually increase or decrease in diameter through the support region in a direction from the first surface to the second surface.

19. A method of forming a sulfonated aryl sulfonate polymer article comprising:

dissolving a sulfone polymer in a sulfonating acid solvent to form a polymer solution, wherein the aryl sulfonate polymer is sulfonated in the solution by the acid solvent;

casting the polymer solution into the shape of the article; and

coagulating the article in a coagulation bath.

20. The method of claim 19, the aryl sulfonate polymer comprising a plurality of aromatic rings, wherein less than about one third of the rings are sulfonated.

21. The method of Claim 19, wherein the coagulation bath is selected from the group consisting of water, sulfuric acid, and mixtures thereof.

22. The method of Claim 19, comprising the additional step of neutralizing the coagulated article in a neutralization bath.

23. The method of Claim 22, wherein the neutralization bath comprises a solution of base in a solvent.

24. The method of Claim 23, wherein the neutralization bath comprises aqueous sodium carbonate.

25. The method of Claim 19, comprising the additional step of rinsing the coagulated article in a rinsing bath.

26. The method of Claim 25, wherein the rinsing bath comprises water.

27. The method of Claim 19, comprising the additional step of drying the coagulated article.

28. The method of Claim 19, wherein the sulfonated aryl sulfonate polymer is selected from the group consisting of polyarylsulfone and polyarylethersulfone.

29. The method of Claim 19, wherein the polymer solution comprises one or more additional components.

30. The method of Claim 29, wherein an additional component is a substantially non-sulfonatable polymer.

31. The method of claim 30, wherein the substantially non-sulfonatable polymer comprises up to about 90 wt. % of the polymer mixture.

32. The method of Claim 30, wherein the substantially non-sulfonatable polymer is selected from the group consisting of polyethyleneglycol, non-aryl polysulfone, non-aryl polyethersulfone, poly-paraphenylene terephthalamide, polyetherketone, and mixtures thereof.

33. The method of Claim 30, wherein the substantially non-sulfonatable polymer comprises polyvinylpyrrolidone.

34. The method of Claim 19, wherein the sulfonating acid solvent comprises sulfuric acid.

35. The method of Claim 19, wherein the sulfuric acid comprises concentrated sulfuric acid.

36. The method of Claim 19, wherein the article comprises a matrix.

37. The method of Claim 36, wherein the matrix is selected from the group consisting of a porous matrix, a non-porous matrix, and a membrane matrix.

38. The method of claim 36, wherein the matrix comprises a membrane having first surface and a second surface, each surface comprising pores therein, the membrane further having a support region between the first and second surfaces, the support region having a plurality of flow channels therein, wherein the pores of the first surface and pores of the second surface are connected via the flow channels.

39. The method of claim 38, wherein the pores of at least one surface have an average diameter of between about 0.01μm and about 50μm.

40. The method of claim 38, wherein the support region comprises one or more structures selected from the group consisting of closed cell pores, open cell pores, macrovoids, finger structures, and mixtures thereof.

41. The method of claim 38, wherein the flow channels are substantially constant in diameter throughout the support region.

42. The method of claim 38, wherein the flow channels gradually increase or decrease in diameter through the support region in a direction from the first surface to the second surface.